

The challenges North Carolina faces, however, result less from deliberate choices and more from circumstance. First, North Carolina's economic history is rooted in agricultural and labor-intensive manufacturing. As a result, the state has had to work hard to diversify its economy in light of the broader changes occurring worldwide. Second, the geography and historical development of the state have generated a small number of major metropolitan areas surrounded by large rural areas. Hence, the levels of innovative activity and prosperity vary greatly throughout the state. And third, classic economic market imperfections related to innovation create impediments that cause the market to generate less innovation than is socially desirable.⁵⁶

In terms of these impediments, it is well established that economic free markets, while the most efficient means to allocate goods and services, fail to allocate sufficient resources for innovation. In particular, at least six classic market imperfections, all currently in play in North Carolina, limit the innovation process.⁵⁷

1. **Organizations produce less innovative activity than society needs:** Studies have consistently shown that the societal rates of return from corporate R&D are at least twice the estimated returns that accrue to the companies performing the R&D.⁵⁸ This is the case because the knowledge needed to create new products and services is a "public good;" it cannot easily be contained within or captured by an individual organization. Thus, left on their own, organizations will produce less innovation than society needs because the knowledge they create can be used by other organizations that have not paid the costs of creating it.
2. **The private financing of R&D is shifting away from riskier early-stage activities to lower-risk later stage activities:** As the venture capital market has matured, companies have found it more profitable to invest in larger deals and less-risky later-stage deals.⁵⁹ The result is a funding gap between the completion of basic research and applied R&D.
3. **R&D increasingly depends on collaboration between industry and universities, but the interests of the collaborators are not well aligned:** Since the end of World War II, the amount of research that industry conducts in-house has decreased. As a result, companies are increasingly outsourcing R&D to universities and engaging in industry-university collaborations. Yet, industry and universities have different cultures and needs, which hinders coordination and impedes the flow of knowledge that can contribute to innovation.
4. **Many organizations lag in adopting proven technologies:** Many organizations, particularly those that aren't science-based or that are small or mid-sized, lack information about new technologies as well as the resources to adopt them once aware of them. Moreover, change of any type is rarely easy, meaning beneficial technologies are often under- or slowly utilized.
5. **The innovation-producing benefits of clusters are under-realized:** Geographic clustering facilitates innovation by enabling and encouraging organizations to share knowledge, take advantage of common resources, and adapt in response to both the increased competition and cooperation within clusters. Yet, these benefits are a public good: they spill over beyond the boundaries of an individual organization, which means that market forces produce less geographic clustering than society needs. Failure to meet these common needs inhibits the growth and productivity of clusters.
6. **The interests of geographically mobile organizations in locating innovative activity may diverge from those of their area residents:** Organization's decisions about where to locate innovative activity are based on their own interests, which may or may not coincide with the interests of an area's residents. With the rise of the globally integrated enterprise, states need robust economic innovation policies to compete globally.

Left to itself, the market will produce less innovation than our society needs. In an interconnected globally competitive world, this is a limitation we can no longer afford.

Together, this mix of geography, historical development, and classic market imperfections adds up to a less-than-optimal innovation ecosystem in North Carolina.

Although the private sector and consumers, not government, are the heart of the engine for the innovation process, public leaders can strengthen it through a framework that optimizes the roles that are uniquely in their hands. Before proposing an enhanced innovation framework, it is useful to review the state's existing framework.

North Carolina's Existing Innovation Framework

North Carolina has several public organizations and programs that focus on activities related to innovation, but there is no agency or organization that focuses solely or primarily on innovation. Moreover, these organizations are largely disconnected from one another and would benefit from additional support, coordination, and alignment. The primary public organizations and programs include the following: